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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/702,049	11/06/2003	Noriaki Fukiage	FIS920060073US1 (RAJ-014)	7419

7590 12/24/2008

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EXAMINER	
TADAYYON ESLAMI, TABASSOM	
ART UNIT	PAPER NUMBER
1792	
MAIL DATE	DELIVERY MODE
12/24/2008	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/702,049	FUKIAGE ET AL.	
	Examiner	Art Unit	
	TABASSOM TADAYYON ESLAMI	1792	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *23 October 2008*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-3 and 6-43* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☐ Claim(s) _____ is/are rejected.

7)☒ Claim(s) *1-3 and 6-4* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 10/23/08 has been entered.

DETAILED ACTION

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims1- 3, 6-7, 9, 23, 27-29, and 31-33 are rejected under 35 U.S.C. 103(a) as being unpatentable by Angeopoulos et al (U. S. Patent: 6316167, here after 167).

3. Claim 1 is rejected. 167 teaches,

a method for depositing a material on a substrate, comprises,

placing a substrate in a chamber having a plasma source and on a substrate holder [column 9 line 65]. 167 teaches depositing the ARC layer on the substrate, 167 teacehs the film is R:C:O:X where the R: is silicon and X is not present (abstract lines 4-8)[column 9 lines 65-67], for example SiOC or SiON

wherein the precursor is provided to the chamber [Colum 10 lies 4-10]. 167 doesnot teach modifying the surface of the film, however 167 teaches preventing the formation of a photoresist foot (poisoning) during a subsequent lithographic operation, by deposition a layer of RCHX film on the surface of the TERA layer[column 10 lines 45-65]. Therefore it would have been obvious to one of ordinary skill in the art at the time of invention was made to have a method of film deposition that 167 teaches and have a layer of RCHX deposited on top of it to prevent resist poisoning effect, Because 167 teaches the RCHX films are compatible with resist. In fact it is inherent by depositing the RCHX layer on RCOX layer the top layer of the deposited TERA layer is modified. 167 also teaches the RCHX films obtain by vapor deposition process [column 13 lines 11-13, and claim 2], and further teaches the vapor deposition is assisted with high density plasma [claim 4]. It is also inherent that for depositing the RCHX film (containing hydrogen), a hydrogen containing gas has to be employed.

Claim 2 is rejected. 167 teaches the limitation of claim 1 and Lee.167 teaches the surface treatment is for avoiding or minimizing the resist poisoning[column 10 lines 45-55]. 167 teaches since the application is to fabricate IC's and in nm size, i. e. in 167 [column 1 lines 1-3, column 1 lines 29-33], therefore the footing features should be about nm and are very small.

Claim 3 is rejected. 167 teaches forming plurality of photoresist features on the photoresist compatible surface and she further teaches the feature comprises a well defined rectangle profile [fig. 10].

Claim 6 is rejected. 167 teaches the limitation of claim 1 as discussed above. 167 also teaches using hydrogen containing gas to deposit RCHX(SiCOH) layer[column 9 lines 20-21] with rate of 30 sccm. Although 167 does not teach the gas is H2, however it is inherent that he precursor would decompose as the result of the plasma and create the hydrogen gas prior to dissociation to atoms and radicals.

Claim 7 is rejected. 167 teaches the limitation of claim 1 and 167 teaches forming RCHX film (SiCOH), flowing an inert gas (argon) with flow rate of 30 sccm [column 9 lines 21-22].

Claim 9 is rejected 167 teaches the limitation of claim 1 and 167 also teaches the thickness of the RCHX film is 2400 A(column 13 line 25]. Therefore the life time of the plasma (for deposition the RCHX) layer depends on the growth rate of the layer and for example with an ordinary growth rate of 1A/min, the growth time to get this layer is 40 sec which is in claimed range.

Claim 23 is rejected. 167 teaches the limitation of claim 1 and 167 further teaches depositing a top portion of the TERA layer, wherein the top portion comprises a material having a refractive index of 1.9 and extinction coefficient of 0.25, when measured at a wavelength of 248 nm [column 12 line 61].

Claims 27 and 28 are rejected. 167 and Lee teaches limitation of claim 23 and 167 further teaches the process gas comprises silicon, carbon, oxygen and argon containing gas [column 9 line 21].

Claim 29 is rejected. 167 teaches the precursor flowed with the rate of 10 sccm [column 8 line 59] and the inert flowed with the rate of 30sccm [column 9 line 22].

Claim 31 is rejected. 167 teaches the limitation of claim 27 and 167 further teaches the inert gas to be argon [column 9 line 21].

Claims 32-33 are rejected. 167 teaches the limitation of claim 1 and 167 further teaches controlling the substrate temperature at 60 °C [column 8 line 62].

4. Claims 10, 15-17, 19-21 are rejected under 35 U.S.C. 103(a) as being unpatentable over M. Angeopoulos et al (U. S. Patent: 6316167, here after 167), further in view of Sang-Yun Lee et al, Journal of Electrochemical Society, 150(1) G58-G61(2003), here after Lee.

Claim 10 is rejected. 167 teaches the limitation of claim 1 as discussed above. 167 does not teach the refractive index of SiON or SiOC film. Lee teaches a method of making pattern on an TERA(ARC) layer by lithography and Lee further teaches to deposit SiOC or SiON as an ARC layer [page G58, 4th paragraph]. Lee also teaches the refractive index of the film is 1.8-22 and the extinction coefficient is 0.6-0.7 at 193 nm wavelength [page G58, last paragraph]. Therefore it would have been obvious to one of ordinary skill in the art at the time of invention was made to have a method of deposition that 167 teaches where the SiON film has refractive index and extinction coefficient as Lee teaches, because Lee teaches it is suitable to have SiON film with these characteristics.

Claims 15-17 are rejected. 167 and Lee teach the limitation of claim 10 as discussed above and Lee teaches the process gas comprises silicon containing

and carbon containing precursor with flow rate of 200-500 sccm[3MS, page G58, paragraph 5 lines 4-6]. Therefore it would have been obvious to one of ordinary skill in the art at the time of invention was made to have a method of deposition that 167 and Lee teach where the SiOC film is deposited by 3MS as Lee teaches, because Lee teaches it is suitable to deposit SiOC film with 3MS gas.

Claim 19 is rejected. 167 and Lee teach the limitation of claim 15 as discussed above and Lee teaches the process gas comprising an inert gas such as helium[page G58, paragrapg5 lines 4-6]. Therefore it would have been obvious to one of ordinary skill in the art at the time of invention was made to have a method of deposition that 167 and Lee teach where the SiOC film is deposited by 3MS and He as Lee teaches, because Lee teaches it is suitable to deposit SiOC film with 3MS gas.

Claims 20-21 are rejected. 167 and Lee teach the limitation of claim 10 as discussed above and Lee teaches the chamber pressure is 7 torr [page G58 paragraph 5, line 4]. Therefore it would have been obvious to one of ordinary skill in the art at the time of invention was made to have a method of deposition that 167 and Lee teach where cjamber pressure is 7 torr because Lee teaches it is suitable to chamber pressure to deposit SiOC.

5. Claim 18 is rejected under 35 U.S.C. 103(a) as being unpatentable over M. Angeopoulos et al (U. S. Patent: 6316167, here after 167), and Sang-Yun Lee et al, Journal of Electrochemical Society, 150(1) G58-G61 (2003), here after Lee, as applied to claim 15 above, further in view of Hongning Yang et al (U. S. Patent: 6410462, here after 462).

Claim 18 is rejected. 167 and Lee teach the limitation of claim 15. They do not teach using methane (CH4) for deposition SiOC film. 462 teaches a method of deposition SiCO films [abstract lines 1-3], where the carbon source is methane [abstract and column 4 lines 57-63]. Therefore it would have been obvious to one of ordinary skill in the art at the time of invention was made to have a method of deposition that 167 and Lee teach where the carbon source gas as methane is used along with other gases, because 462 teaches it is suitable to deposit SiOC with methane gas.

6. Claims 8 and 24 are rejected under 35 U.S.C. 103(a) as being unpatentable over M. Angeopoulos et al (U. S. Patent: 6316167, here after 167) and Sang-Yun Lee et al, Journal of Electrochemical Society, 150(1) G58-G61 (2003), here after Lee, further in view of Seon Mee Cho et al (U. S. Patent Application: 2003/0003768, here after Cho).

Claims 8 and 24 are rejected. 167 and Lee teach the limitation of claim 1 as discussed above. 167 teaches a method of deposition a layer (comprises Si, C, O, H) [column 4 lines 12-24] on a substrate which meets the limitation of claims 1, 10 and 24 as discussed above. 167 does not specifically teach the plasma source has a RF source. Cho teaches a method of deposition of organosilicate layers [0016 lines 1-4] wherein the plasma source (11) has a RF source in a power range of 10 watt/ cm^2 to about 200 watt/ cm^2 [0038, lines 3-5] frequency of 13.56 MHz [0037 lines 5-6 and 11-15]. Therefore it would have been obvious to one of ordinary skill in the art at the time of invention was made to have a method of deposition in which the plasma source has a RF has the

power of 1 watt/ cm^2 to about 500 watt/ cm^2, 13.56 MHz frequency, because Cho teaches it is suitable to deposit TERA layer with having RF plasma source.

7. Claims 11-12 are rejected under 35 U.S.C. 103(a) as being unpatentable over M. Angeopoulos et al (U. S. Patent: 6316167, here after 167), and Sang-Yun Lee et al, Journal of Electrochemical Society, 150(1) G58-G61 (2003), here after Lee as applied to claim 10 above, further in view of James N. Herron et al (U. S. Patent: 6108463, here after 463).

Claim 11 is rejected. 167 and Lee teach the limitation of claim 10. They do not teach the deposition rate of SiON layer. James teach a method of depositing SiON where the growth rate of the layer is 590A/min [column 16 lines 66-67]. Therefore it would have been obvious to one of ordinary skill in the art at the time of invention was made to have a method of deposition of TERA layer as 167 and Lee teaches where the deposition rate of SiON is 590A/min as Jin teaches, because Jin teaches it is suitable deposition rate for SiON.

Claim 12 is rejected. 167 and Lee teach the limitation of claim 10. In claim 11 rejection the deposition rate for depositing SiON is 590 A/min and since Lee teaches the thickness of the SiON layer is about 200-300 A[fig. 3], therefore the deposition time is less than 180 sec(3 minutes).

8. Claims 13-14 are rejected under 35 U.S.C. 103(a) as being unpatentable over M. Angeopoulos et al (U. S. Patent: 6316167, here after 167), and Sang-Yun Lee et al, Journal of Electrochemical Society, 150(1) G58-G61(2003), here after Lee as applied to claim 10 above, further in view of Been Yin Jin et al a(U. S. Patent: 5883001, here after Jin).

Claims 13-14 are rejected. 167 and Lee teach the limitation of claim 10 as discussed above. 167 does not teach depositing parameters for depositing SiON. Jin teaches a method of deposition SiON where the RF source is 350 Hz or Watts [table 1 in column 8]. Therefore it would have been obvious to one of ordinary skill in the art at the time of invention was made to have a method of deposition of TERA layer as 167 and Lee teaches where the RF source is taught by Jin, because Jin teaches it is suitable to deposit SiON layer with RF power of 350Hz(Watt).

9. Claim 22 is rejected under 35 U.S.C. 103(a) as being unpatentable over M. Angeopoulos et al (U. S. Patent: 6316167, here after 167), and Sang-Yun Lee et al, Journal of Electrochemical Society, 150(1) G58-G61(2003), here after Lee as applied to claim 10 above, further in view of Craig A. Roderick (U. S. Patent: 6074488, here after 488). 167 teaches the limitation of claim 10 as discussed above. They do not teach the DC voltage is applied to an electrostatic chuck. 488 teaches a method of plasma deposition [column 10 lines 42-46] where a DC voltage applied to the electrostatic chuck [column 2 lines 58-60]. He further teaches the DC voltage is about 200-2000 Volts [claim 32]. Therefore it would have been obvious to one of ordinary skill in the art at the time of invention was made to have a method of plasma deposition wherein the DC voltage to an electrostatic chuck of about 200-2000 Volts to hold the substrate and generate plasma, because 488 teaches it is desirable to deposit material on a surface by such a plasma processing to eliminate extraneous components [column 2, lines 55-65].

10. Claims 25-26 are rejected under 35 U.S.C. 103(a) as being unpatentable over M. Angeopoulos et al (U. S. Patent: 6316167, here after 167), further in view of Houng T. Nguyen et al (U. S. Patent application: 2003/0017694, here after 694).

Claim 25 is rejected. 167 teaches the limitation of claim 10 as discussed above. 167 teaches a method of deposition a TERA layer (comprises Si, C, O, H) [column 4 lines 12-24] on a substrate. 167 does not specifically teach the deposit rate of the bottom portion of the TERA layer is about 100-10000 A/ min. 694 teaches a method of deposition of organosilicate layers [abstract lines 1-2] wherein the deposit rate of the organosilicate material is in the range of 1000-20000 A/ min [0055 lines 12-14]. Therefore it would have been obvious to one of ordinary skill in the art at the time of invention was made to have a method of deposition of TERA layer in which the deposition rate of the TERA layer is 100-10000 A/ min, because 694 teaches it is suitable to deposit TERA layer with these deposition rate.

Claim 26 is rejected. 167 teaches the limitation of claim 10 as discussed above. 167 teaches a method of deposition a TERA layer (comprises Si, C, O, H) [column 4 lines 12-24] on a substrate. 167 does not specifically teach the deposition time for depositing the bottom layer is between 5-18 seconds. 694 teaches a method of deposition of organosilicate layers [abstract lines 1-2] wherein the deposit rate of the organosilicate material is 20000 A/ min [0055 lines 12-14]. He further teaches the thickness of the layer is about 3000 A [0057 lines 4]. Therefore it would have been obvious to one of ordinary skill in the art at

the time of invention was made to have a method of deposition of TERA layer in which the deposition time of the bottom TERA layer is about 9 sec, because 694 teaches within this time the thickness of the TERA layer is appropriate.

11. Claim 30 is rejected under 35 U.S.C. 103(a) as being unpatentable over M. Angeopoulos et al (U. S. Patent: 6316167, here after 167), further in view of A. Grill, Journal of Applied Physics, Vol. 93 (2003) 1785-1790, here after Grill. 167 teaches limitation of claim 27, as discussed above. 167 does not teach the precursor comprises TMCTS. Grill teaches a method for depositing SiCOH by PECVD when the precursor is TMCTS [column 2 line 4 and 27, page 1785] (mixing with inert gas (column 1 line 6 page 1786). Therefore, it would have been obvious to one of ordinary skill in the art at the time of invention was made to have a method for depositing SiCOH film via PECVD that 167 teaches when the precursor is TMCTS, because Grill teaches it is suitable to use TMCTS for depositing SiCOH film via PECVD process.

1. Claims 34-35 are rejected under 35 U.S.C. 103(a) as being unpatentable over M. Angeopoulos et al (U. S. Patent: 6316167, here after 167), further in view of Tae K. Won (U. S. Patent Application: 2003/0044621, here after Won). 167 teaches the limitation of claim 1 as discussed above. 167 does not teach controlling the chamber wall temperature. Won teaches a method of deposition of organosilicate layers [abstract lines 7-9] wherein where the chamber wall temperature is controlled [0051 lines11 to the end] in order to obtain uniform film [claim 2 lines 7-10], he further teaches the temperature is between 380-410 °C [claim 2 line 9-10]. Therefore it would have been obvious to one of ordinary skill

in the art at the time of invention was made to have a method of deposition of TERA layer in which chamber wall temperature is controlled and is between 380-410 C, because Won teaches the deposited film will be uniform with controlling the chamber temperature between 380-410 C.

2. Claims 36-37 are rejected under 35 U.S.C. 103(a) as being unpatentable over M. Angeopoulos et al (U. S. Patent: 6316167, here after 167), further in view of Zheng Yuan (U. S. Application: 2002/0163028, here after Yuan).

Claim 36 is rejected. 167 teaches the limitation of claim 1 as discussed above. 167 further teaches a shower head assembly is coupled to the chamber [120 fig. 2 and 0027 lines 3-5]. 167 does not specifically teach the temperature of the showerhead. Yuan teaches a method for depositing film on a substrate [abstract lines 1-2, 0007 lines 1-4], where the temperature of showerhead is about 90-120 C [0040 lines 3-12], to enhance the reaction time between the species. Therefore it would have been obvious to one of ordinary skill in the art at the time of invention was made to have a method of deposition of TERA layer in which the showerhead temperature is controlled and is between 90-120 C, because Yuan teaches it enhance the reaction time between the species.

Claim 37 is rejected. 167 and Yuan teach the limitation of claim 36 as discussed above. 167 teaches a shower head assembly is coupled to the chamber [120 fig. 2 and 0027 lines 3-5]. Yuan teaches a method for depositing film on a substrate [abstract lines 1-2, 0007 lines 1-4], where the temperature of showerhead is about 90-120 C [0040 lines 3-12], to enhance the reaction time between the species. Therefore it would have been obvious to one of ordinary

skill in the art at the time of invention was made to have a method of deposition of TERA layer in which the showerhead temperature is controlled and is between 90-120 C, because Yuan teaches it enhance the reaction time between the species.

3. Claim 38 is rejected under 35 U.S.C. 103(a) as being unpatentable over M. Angeopoulos et al (U. S. Patent: 6316167, here after 167), further in view of Enzo Carollo (U. S. Patent Application: 2004/0137169, here after Carollo). 167 teaches the limitation of claim 1, as discussed above. 167 does not teach de-chucking the substrate while the post plasma processing is being created. Carollo teaches a method of plasma deposition of silicon nitride [abstract lines 1-3], where a layer of oxide will deposit after deposition of silicon nitride [0034]. He further teaches de-chucking the substrate while generating the post processing plasma (oxygen) [claim 10]. Therefore it would have been obvious to one of ordinary skill in the art at the time of invention was made to have a method of deposition of TERA layer that 167 teaches where de-chucking the substrate while the post plasma processing is generated, because Carollo teaches it is suitable to have the substrate de-chuck during the generation of post processing plasma.

4. Claims 40 and 43 are rejected under 35 U.S.C. 103(a) as being unpatentable over M. Angeopoulos et al (U. S. Patent: 6316167, here after 167), further in view of Yuan-Ko Hwang et al (U. S. Patent: 6238160, here after Hwang).

167 teaches the limitation of claim 1, as discussed above, 167 does not teach de-chucking the substrate after the post plasma processing is extinguished. Hwang teaches a method of transporting the electrostatically chucking wafers for plasma processing [column 2 lines 43-45] where the de-chucking of the wafer happens after the plasma is extinguished [column 5 lines 61-65 and column 6 lines 1-3] to eliminate the negative charge from the wafer. He further teaches after that the lifter will raise the wafer [column 6 lines 3-6]. Therefore it would have been obvious to one of ordinary skill in the art at the time of invention was made to have a method of deposition that 167 teaches where de-chucking the substrate is taught by Hwang and happens after the plasma processing is extinguished and lifting the substrate happens after the plasma processing is extinguished, because Hwang teaches de-chucking the substrate helps to remove the negative charges on the substrate.

5. Claims 41-42 is rejected under 35 U.S.C. 103(a) as being unpatentable over M. Angeopoulos et al (U. S. Patent: 6316167, here after 167), further in view of Dan Maydan et al (U. S. Patent: 4951601, here after Maydan). 167 teaches the limitation of claim 1 as discussed above. 167 does not teach lifting the substrate before the post processing plasma is created. Maydan teaches a multi-chamber for processing the semiconductor wafers [abstract lines 1-2] comprises a robot, which load and unload the wafers [abstract lines 7 and 10-12]. Maydan further the multi-chambers can be used for different processing such as deposition sputtering, etching and…[abstract lines 12-17]. Considering two-deposition process in two different chambers, the wafer is lifted by a robot to

transfer from the first chamber to the second chamber [column 7 lines 26-28], before the post plasma deposition created from the second chamber. The wafer also is transferred from one deposition chamber to another chamber while the plasma is being crated in the third chamber (claim 41 rejection). Therefore it would have been obvious to one of ordinary skill in the art at the time of invention was made to have a method of deposition that 167 teaches where the deposition happened in Maydan's multiple processing chamber, because Maydan teaches the multiple processing chamber is suitable for processing the semiconductor wafers.

6. Claim 39 is rejected under 35 U.S.C. 103(a) as being unpatentable over M. Angeopoulos et al (U. S. Patent: 6316167, here after 167), further in view of Enzo Carollo (U. S. Patent; 6953609, here after Carollo) and S. Avanzino, et al (U. S. Patent: 5776834, here after 834). 167 teaches the limitation of claim 1, as discussed above, 167 does not teach de-chucking the substrate before the post processing plasma is created. Carollo teaches a method of plasma deposition of silicon nitride [abstract lines 1-3], where the electrostatic chuck holds the substrate [0021 lines 1-3] and chucking and de-chucking of the substrate happens by applying or removing the direct voltage to the chuck [0021 lines 9-10]. 834 teaches a method of deposition insulating layers [title, column 2 lines 67-68 and column 6 lines 50-52] where the bias to the substrate [column 3 lines 37-38] is off [column 6 lines 63-65], which means the wafer is de-chucked, before the plasma is created. Therefore it would have been obvious to one of ordinary skill in the art at the time of invention was made to have a method of deposition

that 167 teaches where the substrate is de-chucked before the plasma is created, because 834 teaches it is suitable method for plasma deposition of materials.

Response to Arguments

7. Applicant's arguments filed 03/12/08 have been fully considered but they are not persuasive. In response to applicant's argument that the examiner's conclusion of obviousness is based upon improper hindsight reasoning, it must be recognized that any judgment on obviousness is in a sense necessarily a reconstruction based upon hindsight reasoning. But so long as it takes into account only knowledge which was within the level of ordinary skill at the time the claimed invention was made, and does not include knowledge gleaned only from the applicant's disclosure, such a reconstruction is proper. See *In re McLaughlin*, 443 F.2d 1392, 170 USPQ 209 (CCPA 1971).

In respond of amending claim 1, the examiner use alternative interpretation of the reference to meet the limitation of amended claim as discussed in claim 1 rejection above.

The applicant argues 167 does not teach small footing resist. However 167 teaches the effect of resist poisoning and it leads to footing (as Lee discloses).

The applicant further argues since rejection for claim 1 is not valid, the rest of the 103 rejections have to be withdrawn. The examiner disagrees since combining the Lee reference with 167 clearly reject claim 1.

Conclusion

8. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

9. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Tabassom T. Tadayyon-Eslami whose telephone number is 571-270-1885. The examiner can normally be reached on 7:30-5.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Michael Cleveland can be reached on 571-272-1418. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Tabassom T. Tadayyon-Eslami/

Examiner, Art Unit 1792

/Michael Cleveland/

Supervisory Patent Examiner, Art Unit 1792